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## **A SYSTEM AND METHOD FOR IMAGE AND VIDEO SEGMENTATION BY ANISOTROPIC KERNEL MEAN SHIFT**

### **ABSTRACT OF THE INVENTION**

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Mean shift is a nonparametric estimator of density which has been applied to image and video segmentation. Traditional mean shift based segmentation uses a radially symmetric kernel to estimate local density, which is not optimal in view of the often structured nature of image and more particularly video data.

15 The system and method of the invention employs an anisotropic kernel mean shift in which the shape, scale, and orientation of the kernels adapt to the local structure of the image or video. The anisotropic kernel is decomposed to provide handles for modifying the segmentation based on simple heuristics.

Experimental results show that the anisotropic kernel mean shift outperforms the  
20 original mean shift on image and video segmentation in the following aspects: 1) it gets better results on general images and video in a smoothness sense; 2) the segmented results are more consistent with human visual saliency; and 3) the system and method is robust to initial parameters.